

At the outset, prior to addressing the merits of the issues raised in the Office Action, the applicants call to the Examiner's attention that, although it was not required by the Examiner, claim 1 has been amended to improve claim form to reformat the definitions for "signal line regions" and "pixel aperture regions" and to introduce the term "adjacent regions". Support for the amendment is found in the previous language of claim 1 "regions of said signal lines and their vicinities that is referred to simply as signal line regions" and "regions of apertures of said pixels and their vicinities that is referred to simply as pixel aperture regions." Support for "adjacent regions" is found in the previous language of "and their vicinities". Further support is provided by pixel aperture region 34 and signal lines 20 in FIG. 7. Support for the definitions of "said signal lines including adjacent regions, said signal lines and said adjacent regions defining signal line regions, said pixels including apertures, said pixels and said apertures including adjacent regions, said pixels and said apertures and said adjacent regions defining pixel aperture regions," is provided by the previous language of claim 1 and also by pixel aperture region 34 and signal line 20 in FIG. 7.

No new matter has been added.

Applicants have attached hereto a marked-up version of the claims showing the amendments made thereto. It is entitled "Version With Markings to Show Changes Made."

**Restriction Requirement: Claims 3-4, 7-8, 10-11, 13-14, 17-18 and 21-22**

The Examiner has acknowledged the applicants' election in a paper filed February 21, 2002 of Group A: Claims 2, 6, 9, 12, 16, 20 and 27. Claim 1 is

generic. Therefore, the claims of Group B: 3-4, 7-8, 10-11, 13-14, 17-18 and 21-22 are drawn to a non-elected invention.

**35 U.S.C. 103(a) Rejections: Claims 1-2, 5-6, 9, 12, 15-16, 20 and 23-27**

The Examiner has rejected claims 1-2, 5-6, 9, 12, 15-16, 20 and 23-27 under 35 U.S.C. 103(a) as being unpatentable over Ohta et al. (US 6,064,460 – filed May 15, 1998 – issued May 16, 2000) in view of Numano et al (US 6,313,898 B1 – filed December 15, 1998 – issued November 6, 2001).

With respect to claims 1, 5, 15, 19 and 23-27, the Examiner asserts that Ohta et al discloses all of the limitations of claim 1 of an LCD device except that Ohta et al does not disclose the alignment process is carried out such that the alignment layer of a pixel aperture region is different from a signal line region. The Examiner asserts, however, that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Ohta et al device with the intermediate alignment regions 19a and signal wiring 7 and their vicinities, e.g., pixel aperture region, of Numano et al, FIG. 7 to achieve a device having an alignment layer in which liquid crystal molecules at a pixel region to be aligned differently from that at a signal line to achieve a device which is high in aperture ratio and free from cross talk, as recited by claim 1.

In response, the applicants have prepared a comparison table between the limitations of claim 1 and the references Ohta et al and Numano et al shown in ENCLOSURE A. Based on the comparison table, the applicants respectfully maintain that in Numano et al, the intermediate alignment films 19a in FIG. 7 are illustrated as being positioned solely under the black matrices 16.

In contrast, in the present invention recited by claim 1, as amended, specific alignment processing is carried out such that alignment of said first alignment layer and said second alignment layer differs at said signal line regions and at said pixel aperture regions.

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Therefore, in Numano et al, the alignment process is limited solely to the regions directly under the black matrices 16, whereas, in the present invention of claim 1, the alignment process occurs in the signal line regions and the pixel aperture regions.

Furthermore, neither Ohta et al nor Numano et al disclose, teach or suggest switching elements that individually control electric fields applied to pixel electrodes of said pixels.

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active matrix

The Examiner has not provided specific arguments against claims 5, 15, 19 and 23-27. However, the applicants respectfully maintain that Numano et al does not overcome the deficiencies of Ohta et al with respect to claim 1 and therefore, claims 5, 15, 19 and 23-27 patentably distinguish over Ohta et al in view of Numano et al.

The applicants request therefore that the rejection of claims 1-2, 5-6, 9, 12, 15-16, 20 and 23-27 under 35 U.S.C. 102(e) be withdrawn.

**35 U.S.C. 103(a) Rejections: Claims 2, 6, 9, 12, 16 and 20**

The Examiner has rejected claims 2, 6, 9, 12, 16 and 20 as being unpatentable over Ohta et al in view of knowledge notoriously well known in the

art to reduce a driving voltage in a LCD device by using liquid crystal molecules having a positive dielectric constant anisotropy.

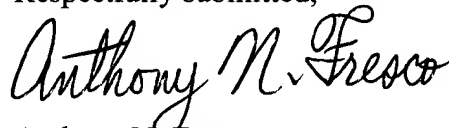
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Again, the Examiner has not provided specific arguments against claims 6, 9, 12, 16 and 20. However, the applicants maintain that the notoriously well known knowledge cited by the Examiner does not overcome the deficiencies of Ohta et al with respect to claim 1 and therefore, claims 2, 6, 9, 12, 16 and 20 patentably distinguish over Ohta et al in view of the notoriously well known knowledge cited by the Examiner.

Therefore, the applicants request that the Examiner withdraw the rejection under 35 U.S.C. 103(a) of Claims 2, 6, 9, 12, 16 and 20.

The foregoing Amendment and Remarks establish the patentable nature of all of the elected claims in the application, i.e., generic claim 1 and elected claims 2, 5-6, 9, 12, 15-16, 20 and 23-27. No new matter has been added, wherefore early and favorable reconsideration and issuance of a Notice of Allowance are respectfully requested.

Respectfully submitted,



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Enclosure

**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**In the Claims:**

**Claim 1 has been amended as follows:**

1. (Amended) A liquid crystal display device comprising a first transparent substrate and a second transparent substrate arranged to confront each other, and a liquid crystal component layer sealed between said first transparent substrate and said second transparent substrate[; wherein]

said first transparent substrate [is] being provided with a transparent insulating subs control electric fields applied to pixel electrodes of said pixels, signal lines connected to said switching elements; common lines that supply a prescribed electric potential to

said second transparent substrate is provided with at least a second alignment layer on the highest layer,

said signal lines including adjacent regions, said signal lines and said adjacent regions defining signal line regions,

said pixels including apertures, said pixels and said apertures including adjacent regions, said pixels and said apertures and said adjacent regions defining pixel aperture regions, and

specific alignment processing is carried out such that alignment of said first alignment layer and said second alignment layer differs at said signal line regions [of said signal lines and their vicinities that is referred to simply as signal line regions] and at said pixel aperture regions [of apertures of said pixels and their vicinities that is referred to simply as pixel aperture regions].

ENCLOSURE ACOMPARISON OF CLAIM 1 TO OHTA ET AL AND NUMANO ET AL

Ohta et al – FIGS. 1A –1D		Numano et al – FIG. 7		Present Invention – Watanabe et al	
Item	Description	Item	Description	Claim 1	
LC SUB1  SUB2	liquid crystals first transparent glass substrate second transparent glass substrate			LCD first transparent substrate and second transparent substrate arranged to confront each other, LC layer sealed between said first and second transparent substrates	<b>12 first glass substrate; 14 second glass substrate</b>
SUB1	first transparent substrate			first transparent substrate	<b>12 first glass substrate;</b>
				--transparent insulating substrate	<b>18 transparent insulating film</b>
PX	pixel electrodes			-- pixel electrodes	<b>22 pixel electrodes</b>

CT	counter electrodes			-- common electrodes substantially parallel (to pixel electrodes) and alternately arranged on said transparent insulating substrate,	<b>16A, 16B common electrodes</b>
BM	black matrix			-- a plurality of pixels arranged in matrix form	<b>34 pixel aperture region</b>
				-- scan lines and switching elements that individually control electric fields applied to pixel electrodes of said pixels;	<b>20 signal lines, scan lines, 30, 32 switching structures, 22 pixel electrodes</b>
CT	counter electrodes			-- common lines that supply a prescribed electric potential to common electrodes of said pixels	<b>24 common lines; 16A, 16 common electrodes</b>

		13	other alignment film	-- a first alignment layer formed on the highest layer	<b>51 first alignment layer</b>
		19	alignment film	-- at least a second alignment layer on the highest layer	<b>53 second alignment layer</b>
		7 19a (16)	<b>signal wiring; intermediate alignment film; (intermediate alignment films are located only under black matrices 16)</b>	<b>-- specific alignment processing is carried out such that alignment of said first alignment layer and said second alignment layer differs at said signal line regions and at said pixel aperture regions.</b>	